

ART. III.—*Notes on some Lancefield Graptolites.*

By G. B. PRITCHARD.

[Read 8th March, 1894.]

In the Proceedings of this Society for the year 1891, Mr. T. S. Hall, M.A., described a new species of *Dictyonema* under the name of *D. grande*. Since the publication of that paper I have been fortunate enough to obtain among some additional examples of the species, an exceptionally perfect and well-preserved specimen, with the hydrothecæ well developed and clearly discernible. Mr. G. Clark, who accompanied me on the occasion of obtaining this prize, kindly drew my attention to a small exposure of the free branches of the polyp-stock on a face of the outcrop, and by exerting a little care I was able to secure both sides of a perfectly entire specimen. I take this opportunity of thanking Mr. Clark for his kindness in so readily handing over his right to this specimen.

GENUS DICTYONEMA, Hall.

*Dictyonema*, though it has been very often placed among the Graptolites, strictly speaking does not belong to them, as the very characteristic chitinous supporting rod of that group is absent. Professor Nicholson\* regards *Dictyonema* as probably an early type of the Order *Thecaphora* of which *Sertularia* and *Campanularia* are living representatives. Zittel† appears to hold the same view, as he places it in the Sub-order *Campanulariæ*.

The genus was originally founded by Professor J. Hall‡ in the following language:—"Fronds consisting of flabelliform or funnel-shaped expansions (circular from compression), composed of slender radiating branches, which frequently bifurcate as they recede from the base. Branches and subdivisions united laterally by fine transverse dissepiments; exterior of branches

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\* Manual of Palæontology, vol. i., p. 204.

† Handbuch der Palæontologie, Band I., p. 289.

‡ Palæontology of New York, vol. ii., p. 174, 1852.

strongly striated and often deeply indented; inner surface celluliferous or serrate, as in *Graptolithus*." Although Professor Hall indicates the occurrence of hydrothecæ in the above description, it does not seem to me absolutely clear whether the whole frond bears hydrothecæ or only a portion of it. Judging from the specific descriptions, specimens with the hydrothecæ preserved must have been very rare indeed, as the majority of the species which have come under my notice have been incomplete in this respect.

Zittel\* gives the following definition:—"Hydrosome, funnel pannier or fan-shaped, with numerous branches almost parallel, strong, forked and united by cross-threads. The ends of the branches are free, and are then set on one side with pointed hydrothecæ. The latter appear very perishable, and are exceedingly seldom preserved." In this definition it is apparently intended to indicate that only the free ends of the branches bear hydrothecæ. In the specimen now before me the hydrothecæ occur not only on the free ends of the branches, but are also plainly seen on other parts of the frond, and I have been able to trace them almost to the very centre of the polyp-stock.

Mr. T. S. Hall remarks in connection with the description of his species,† that "the diameter of a perfect specimen has not yet been determined, and the hydrothecæ are not visible in any of the specimens." I will therefore avail myself of this opportunity to add the following observations to complete the diagnosis of—

#### DICTYONEMA GRANDE, T. S. Hall.

The branches where the hydrothecæ are well-developed are from 2.5 mm. to 3 mm. broad. Hydrothecæ long, narrow, mucronate, indent the branches for about one-third the width, free for about one-fifth their length; length 5 mm., breadth of aperture 1 mm., but gradually narrowing towards the back of the branch. The upper margin or aperture is decidedly concave; the lower margin is straight, can be traced to a point opposite the aperture of the third lower hydrotheca, and makes an angle of about 15° with the back of the branch; the mucronate point is set at about twice that angle, which gives a somewhat arched

\* Handb. d. Pal., Band I., p. 289.

† Proc. Roy. Soc. Viet., vol. iv., N.S., pt. I., p. 8.

aspect to the upper portion of the lower margin. Hydrothecæ number ten to the centimetre. Breadth of the entire stock, from 24 cm. to about 30 cm.

#### GENUS TEMNOGRAPTUS, Nicholson.

In 1891 I described a gigantic graptolite under the name *Temnograptus magnificus*, and drew attention to the close relation which undoubtedly existed between it and *T. multiplex*, Nicholson, the type of the genus, and three other species originally described by Professor J. Hall as *Graptolithus flexilis*, *G. rigidus*, and *G. abnormis*. The three last-named species are now regarded as belonging to the genus *Clonograptus*, and according to Dr. O. Herrmann in a paper on the *Dichograptidæ*\* *T. multiplex*, Nicholson, must also be referred to this genus, as he asserts that *Temnograptus* is not sufficiently distinct from *Clonograptus*. However, in a communication I received from Professor Nicholson he informs me that he is not at all disposed to regard these two genera as identical, also that he regards my species as doubtless congeneric with his *T. multiplex*. I will therefore for the present allow the generic location of my species to stand unaltered.

#### GENUS CLONOGRAPTUS, Hall.

“Hydrosome bilaterally sub-symmetrical, consisting of more than four simple branches produced by dichotomous division. The spaces between the furcation-points are larger than in *Dichograptus*. Central disc never present.”

#### CLONOGRAPTUS FLEXILIS, Hall.

*Graptolithus flexilis*, Hall, Geological Survey of Canada Report for 1857, p. 119; also Graptolites of the Quebec Group, p. 103, pl. x., figs. 3-9.

*Description*.—Polyp-stock multibrachiate, composed of numerous slender branching stipes symmetrically disposed on the two sides of their origin. Sicular, minute; funicle, short, from 1.5 mm. to 2.5 mm. in length, dividing at the extremities at an angle of about 105°; each of these four branches again divides within the space of from 2.5 mm. to 5 mm., making eight principal

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\* Geo. Mag., N.S., Dec. III., vol. iii, No. 1, p. 25.

branches, which are again several times bifurcated. Hydrothecæ commence above the third bifurcation, that is taking the division of the sicula into two branches, which form the funicle, as the first bifurcation. Stipes slender, flexuous, diverging at a smaller angle at each successive bifurcation; filiform at base, and, where the hydrothecæ are developed, measure from 1 mm. to 1.75 mm. The non-hydrothecal-bearing stipes measure about .5 mm. in width. In the entire stock there are six bifurcations, giving rise to sixty-four branchlets in all. Breadth of the entire stock about 9 c.m.

Hydrothecæ, short and acute, indent the branches for one-half the width, and are free for nearly one-half their length; length being about four times their diameter; aperture or upper margin, straight, making an angle of  $90^{\circ}$  with the axis, lower margin straight and inclined to the axis at about  $30^{\circ}$ . Hydrothecæ number from ten to eleven to the centimetre.

*Obs.*—In some of the Lancefield specimens the angle at which the parts of the divided extremities of the funicle diverge is a little greater than that mentioned above, being  $112^{\circ}$  in the specimens under notice; also the length of the four main stipes is from .5 to 2.5 mm. longer in some examples. The hydrothecæ agree well with the original description. On the whole, the agreement of Lancefield specimens with the American is remarkably close and accurate.

This is, I believe, the first record of the occurrence of this species in Victoria, and is all the more interesting on that account, as it is another example of the wide distribution of Graptolite species.

#### TETRAGRAPTUS QUADRIBRACHIATUS, Hall.

This species occurs rather commonly associated with the previously described forms from this locality. It is generally somewhat small, and the hydrothecæ are often not preserved, but occasionally a well-developed specimen has turned up with stipes quite two and one-half inches in length.

In addition to the above, I have a new species of *Dictyonema*, *Didymograptus* represented by, at least, one species, *Tetragraptus*, probably two forms, *Leptograptus*, also two forms, and another species of *Clonograptus*. Notes on these I hope to be able to add on some future occasion.